Application No. 09/871,823
Amendment dated: March 15, 2004
Reply to Office Action dated October 16, 2003

**Amendments to the Claims:**

This listing of claims will replace all prior version, and listings, of the claims in the application:

**Listing of Claims:**

1. (Currently Amended) An electrode module for use in a diagnostic device, comprising

a planar carrier module made of a laminate of an insulating layer having opposing first and second sides and a metal layer applied to the first side and [[an insulator layer, which metal layer is]] divided into at least two metal conductor elements; and

at least one electrode for contact with a sample fluid, the electrode formed directly on the carrier module and including a membrane element for imparting chemical sensitivity to the electrode, the membrane element being applied to the second side of the insulating [[insulator]] layer to be in electrical contact with one of the metal conductor elements through the insulating [[insulator]] layer[[.]], to permit electrical contact and sample fluid contact with the electrode module on the first and second sides of the insulating layer respectively.

2. (Original) The electrode module as defined in claim 1, wherein the metal layer is a metal foil and the insulating layer is an insulator foil.

3. (Original) The electrode module as defined in claim 1, wherein the carrier module is a chip carrier conforming to ISO standard 7816.



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4. (Original) The electrode module as defined in claim 1, wherein the metal layer is divided into at least two metal conductor elements and the electrode module includes at least one electrode for each metal conductor element.

5. (Original) The electrode module as defined in claim 1, wherein the insulating layer has a perforation over each metal conductor element and the membrane element extends through the perforation for electrical contact with the metal conductor element.

6. (Original) The electrode module as defined in claim 1, further comprising an electrokinetic conductor for electrokinetic transport of a solute species to the at least one electrode.

7. (Currently Amended) The electrode module as defined in claim [[1]] 2, wherein the metal foil is made of copper.

8. (Currently Amended) The electrode module as defined in claim [[1]] 2, wherein the metal foil is made of copper coated with films of nickel and gold.

9. (Currently Amended) A diagnostic device for performing chemical analysis, comprising

a housing; and

an electrode module, the electrode module including a carrier module and at least one electrode for contact with a sample fluid, the carrier module being a laminate of an insulating layer having opposing first and second sides and a metal layer applied to the first side and [[an insulator layer, which metal layer is]] divided into at least two metal conductor elements,



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and the at least one electrode being formed directly on the carrier module and including a membrane element for imparting chemical sensitivity to the electrode, the membrane element being applied to the second side of the insulating [insulator] layer to be in [[for]] electrical contact with one of the metal conductor elements through the insulating [[insulator]] layer[[.]]. to permit electrical contact and sample fluid contact with the electrode module on the first and second sides of the insulating layer respectively; the electrode module being mounted to the housing for exposing the conductor elements for exterior access.

10. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the housing further comprises an opening to introduce fluid for contact with the at least one electrode.

11. (Original) The diagnostic device of claim 9, wherein the housing further comprises fluidic elements.

12. (Currently Amended) The diagnostic device of claim [[8]] 10, wherein the housing has a module cavity for receiving the electrode module.

13. (Currently Amended) The diagnostic device of claim [[9]] 12, wherein the opening is in fluid communication with the module cavity.

14. (Original) The diagnostic device of claim 12, wherein the housing is rigid in proximity to the module cavity.

15. (Currently Amended) The diagnostic device of claim 12, wherein the electrode module is [[sealed in]] sealingly mounted to the housing for preventing fluids located in the module



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cavity flowing around the electrode module to the conductor layer and for exposing the conductor elements to an exterior of the housing.

16. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the carrier module is a chip carrier according to ISO standard 7816.

17. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the metal layer of the electrode module has at least two metal conductor elements and at least one electrode for each metal conductor element.

18. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the metal layer is a metal foil and the insulating layer is an insulator foil.

19. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the insulator foil has a perforation over each metal conductor element and the membrane element extends through the perforation for electrical contact with the metal conductor element.

20. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the electrode module further includes an electrokinetic conductor for electrokinetic transport of a solute species to the at least one electrode.

21. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the metal layer is made of copper.

22. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the metal layer is made of copper coated with films of nickel and gold.



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23. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the insulating layer is made of an epoxy material.

24. (Currently Amended) The diagnostic device of claim [[8]] 9, wherein the metal layer is divided into a conductor array consisting of a regular pattern of individual metal conductor elements.

25. (Original) The diagnostic device of claim 19, wherein the perforation is die-cut through the insulator layer.

26. (Original) A diagnostic device for insertion into and electric contact with a connector device for providing an electric connection to a utility electrical device, the diagnostic device comprising

a housing;

an electrode module including a substantially planar carrier module made of a laminate of a metal foil and a perforated insulator foil, which metal foil is divided into at least two metal conductor elements; and at least one electrode formed directly on the carrier module and including a membrane element for imparting chemical sensitivity to the electrode, the membrane element being applied to the insulator foil to be in electrical contact with one of the metal conductor elements through a perforation of the perforated insulator foil;

the housing having a module cavity for receiving the electrode module and the electrode module being placed in the module cavity with the insulator foil facing the interior of the module cavity, the electrode module being sealed in the housing for preventing fluids located



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in the module cavity flowing around the electrode module to the conductor layer and for exposing the conductor layer to an exterior of the housing for electric contact with the connector device; and the housing having means for exposing the electrode of the electrode module to a sample fluid.

27. (Original) The device of claim 26, wherein the electrode module is unit-use and the device is a single use disposable device.

28. (New) A diagnostic device for insertion into and electric contact with a connector device for providing an electric connection to a utility electrical device, the diagnostic device comprising

a housing; an electrode module according to claim 1 mounted to the housing with the second side of the carrier layer facing the housing, the housing having means for exposing the membrane element of the electrode module to a sample fluid, and the electrode module being sealingly mounted to the housing for preventing sample fluid in contact with the membrane element from flowing around the insulating layer to the conductor elements, and for exposing the conductor elements to an exterior of the housing for electric contact with the connector device.

29. (New) An electrode module for use in a diagnostic device, comprising

a planar carrier module made of a laminate of an insulating layer having opposing first and second sides and a metal layer divided into at least two metal conductor elements;



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at least one electrode formed directly on the carrier module and including a membrane element for imparting chemical sensitivity to the electrode, the membrane element being applied to the second side of the insulating layer to be in electrical contact with one of the metal conductor elements through the insulating layer to permit electrical contact and sample fluid contact with the electrode module on the first and second sides of the insulating layer respectively; and

an electrokinetic conductor for electrokinetic transport of a solute species to the at least one electrode.

30. (New) The electrode module as defined in claim 29, wherein the metal layer is a metal foil and the insulator layer is an insulator foil.

31. (New) The electrode module as defined in claim 29, wherein the carrier module is a chip carrier conforming to ISO standard 7816.

32. (New) The electrode module as defined in claim 29, wherein the insulating layer has a perforation over each metal conductor element and the membrane element extends through the perforation for electrical contact with the metal conductor element.

33. (New) A diagnostic device for performing chemical analysis, comprising a housing; an electrode module according to claim 29 mounted to the housing for exposing the conductor elements to an exterior of the housing; and means in the housing for exposing the membrane element of the electrode module to a sample fluid.



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34. (New) The diagnostic device of claim 33, wherein the housing further comprises fluidic elements.

35. (New) The diagnostic device of claim 33, wherein the housing has a module cavity for receiving the electrode module.

36. (New) The diagnostic device of claim 35, wherein the means for exposing is an opening in the housing in fluid communication with the module cavity.

37. (New) The diagnostic device of claim 36, wherein the housing is rigid in proximity to the module cavity.

38. (New) The diagnostic device of claim 33, wherein the electrode module is sealingly mounted to the housing for preventing fluids located in the module cavity flowing around the insulating layer to the conductor elements.

39. (New) The diagnostic device of claim 33, wherein the carrier module is a chip carrier according to ISO standard 7816.

40. (New) The diagnostic device of claim 33, wherein the metal layer of the electrode module has at least two metal conductor elements and the diagnostic device has at least one electrode for each metal conductor element.

41. (New) The diagnostic device of claim 33, wherein the insulating layer has a perforation over each metal conductor element and the membrane element extends through the perforation for electrical contact with the metal conductor element.



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42. (New) The diagnostic device of claim 33, wherein the metal layer is divided into a conductor array consisting of a regular pattern of individual metal conductor elements.



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